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[redacted]

Mr. Francis G. Rodgers, President
Data Processing Division
International Business Machines
112 East Post Road
White Plains, New York

Dear Mr. Rodgers:

The attached note was prepared in response to a query from my office as to why our software maintenance and systems programming costs for IBM 360 equipment continue to rise after three years experience, particularly in light of a history of excellent IBM support on earlier equipment generations. I thought that you might be as interested as I in this evaluation of your product.

We have had a recent opportunity to discuss some of these matters with Mr. Joseph M. Fox who has provided us with 1) a briefing on the quality controls embedded in OS releases which reinforced the notion that there is considerable room for improvement and 2) an opportunity to provide him test data from unclassified Agency job streams which he would in turn see were used in the test corpus to which each generation of OS would be subjected. We appreciate his interest in our problem.

I think that what we have seen indicates that the attached note not only correctly assesses our current situation as a large user of IBM equipment and as an organization committed to the System 360 concept but also suggests some means for restoring the confidence of your customers in the level of support they have come to expect.

Sincerely,

[redacted]

STAT

Chief, Information Processing Staff
Office of Planning, Programming, and Budgeting

Attachment:
Problems with OS 360

Distribution:
Orig & 1 - Addressee w/att
1 - Ex Dir w/att
1 - ER w/att
2 - DD S&T, OCS w/att
1 - OPPB/IPS (sj) w/att
1 - OPPB/IPS (chrono) w/o att
1 - Reading Board

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22 May 1968

Problems with OS 360

This Agency has a large investment in IBM System 360 hardware, application programming, and training. In one area this investment is much larger than we bargained for--maintenance of Operating System/360. Our experience with OS has been most painful. Although this may be a common complaint, it takes on special meaning in our case. Our applications range across the widest possible spectrum of the EDP art, most of which we would like to believe could operate successfully under the integrated environment of OS. In a sense, the 360 architecture and software design is tailor-made for us because it could provide the generality we need--at some cost of suboptimal performance in any one area, a cost we are willing to accept if reasonable.

A listing of problems we have had would read like a horror story, but our complaints boil down to three. The pace of new releases is too fast for us to absorb with reasonable system programming manpower. The motivation to ride this treadmill is strong but not very appealing.

-- A new release will provide some new facilities (which should have been available in the first place).

--A new release will give better performance from already available facilities. (In many cases prior performance was so poor that any change looks like a tremendous improvement.)

-- A new release will correct earlier errors (which should have been detected and corrected prior to initial release).

-- IBM will cease to support release n after release n + 2 is available (which very neatly ties any loose ends of the carrot and stick approach).

There is little evidence of quality control in IBM software production. Many Program Temporary Fixes (PTFs) are published at the same time as the system is released and have to be applied at the customer's site. There is little evidence that quality control has improved. We still see the most obvious errors (e.g. the inability to cope with abnormal job termination situations) as part of a new release, errors which almost any test could hardly fail to detect. The IBM approach seems to be "test after release" at customer's expense and frustration. The callous release of products with known deficiencies is not only costly but insulting to the professional user.

User costs in implementing new releases are unreasonable. This is manifested in several ways:

--- System check-out is tedious, frustrating, and expensive. We have learned that we cannot rely on IBM documentation or verbal assurance about the quality of a release. Experience at other installations is not helpful either, basically because of the scope of our activities as I mentioned earlier. We have learned to question and test every aspect of the system before we expose our applications programmers to it in an operational environment. Beyond testing, a considerable amount of time is spent in transferring procedures and installation-oriented software over to the new system. This task is cumbersome and expensive, particularly considering the rapid rate of new releases.

--- System generation is inefficient, error prone, and inconsistent from release to release. It seems ironic that first and second generation techniques (e.g. much card handling and human intervention between steps) are used to generate a so-called third generation system. Add to these ills the fact that PTFs are required to execute the system generation program itself, and it is clear that the situation is ludicrous.

--- The relationship between new OS releases and hardware engineering changes requires good planning and additional effort. Over the past ten months, over 750 hours of

engineering changes have been installed on our 360 systems--time unavailable for productive work and certainly well beyond that which reasonable planning would call for. Until a few months ago, IBM insisted that installation of these changes be scheduled during periods which meant a significant loss to our scheduling flexibility. Costs in this case were hidden but certainly real.

Currently, our central computing facility is using release 11 with portions of releases 9, 12, and 13 jury-rigged into the system. Obviously, this is a rather fragile arrangement, but probably safer and more productive to the user than coping with the unknowns of new releases. A conservative estimate of the machine time used over the past eight months in system generation, check-out and maintenance is 250 hours. Manpower during the same period was probably five man years. One might argue that additional expertise is needed on our part, but I would match the quality of our system programmers against any other installation of similar size. The people and equipment resources that we have had to dedicate to these activities were at the expense of computer work vital to our national security.

After the debacle of release 9, we were assured that the pace on new releases of OS would be more deliberate and that new quality control procedures were being instituted. However, our experience with release 14 has been the crowning blow. We have been building and testing a system based on this release since it became available, with unsatisfactory results. In this effort, we have followed the previous advice of IBM representatives (which they recently reversed) and avoided substitution of modules from earlier releases as we have done in the past. At the beginning of May, we learned through informal channels that IBM would provide a maintenance release which may solve some FORTRAN and other problems. I consider it inexcusable that knowledge of IBM efforts to repair release 14 in a systematic way was withheld when it was clear that we, along with other installations, were spending time and scarce and costly resources to cure the ills of a doomed system.

I believe the following specific actions by IBM are necessary:

a. That IBM provide the necessary controls so that they could regain the confidence and courage to inform customers of their type I software plans in sufficient time to have a positive impact on customer planning.

b. That IBM provide quality control procedures that will clearly demonstrate through actual performance that IBM's promises regarding projected releases are valid. A specific example here would be a dramatic decrease in the needed PTFs.

c. That quality control procedures include provision for the customer (or user groups or other meaningful forums) to specify benchmark tests and to receive and validate results prior to release.

d. That IBM develop and state a policy regarding periodicity of OS releases that takes into account a realistic trade-off between desirable capabilities and dependable performance.

e. That IBM take specific action to reduce costs of system generation and check-out perhaps by providing standard, pregenerated systems; reducing the complexity of the customer effort in system generation; and/or providing unlimited free machine time for system generation and system check-out (regardless of installation date).

f. That IBM immediately announce that support to previous releases will continue until steps such as those described above are a regular part of new release policy and procedures.

g. That after quality control is instituted, IBM, as a second order of business, undertake serious efforts to overcome deficiencies in system capabilities as recognized by SHARE and GUIDE, whose recommendations should not be taken lightly.

h. That IBM provide some means of incorporating engineering changes on-site in a way which will minimize the loss of system availability to the customer.

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Deputy Director of Computer Services